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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/707,166

11/25/2003

Guang-Nan Tzeng

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09/20/2005

EXAMINER

NGUYEN, MATTHEW VAN

NORTH AMERICA INTELLECTUAL PROPERTY CORPORATION

P.O. BOX 506

MERRIFIELD, VA 22116

ART UNIT

PAPER NUMBER

2838

DATE MAILED: 09/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/707,166

Applicant(s)

TZENG ET AL.

Examiner

MATTHEW V. NGUYEN

Art Unit

2838

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/10/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

1. The disclosure should be carefully reviewed and ensure that any and all grammatical, idiomatic, and spelling or other minor errors are corrected. For instance, in claims 7-12, 14, 15, 18 and 19, "Themethod" should be changed to – The method --.
2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-10 and 12-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Van Auken (U.S. Pat. No. 6,577,110).

With regard to claims 1-10 and 19-20, Van Auken (i.e., Fig. 1A) shows a method of reducing a ripple of the output voltage in a pulse frequency modulated (PFM) voltage regulator of converting a DC voltage source (V_{cc}) to an output voltage (V_o) including an inductor (40) coupled to the DC voltage source, and a capacitor (46) providing the output voltage having a terminal coupled to the inductor, comprising using a PFM switching signal (CHG) for converting the DC voltage source to the output voltage, detecting the output voltage (Voltage Divider Network 19), reducing a duty cycle of PFW switching signal when the output voltage is lower than a predetermined target voltage, which is a DC component of the output voltage, by prolonging a predetermined off-time of the PFM

switching signal (a period of delivering energy from the inductor to the capacitor);
or by shortening a predetermined on-time of the PFM switching signal (a period
of storing energy in the inductor), in accordance and along with an increase of
the absolute difference between the output voltage and the predetermined target
value (col. 3, line 51 – col. 4, line 53).

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all
obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set
forth in section 102 of this title, if the differences between the subject matter sought to be patented and
the prior art are such that the subject matter as a whole would have been obvious at the time the
invention was made to a person having ordinary skill in the art to which said subject matter pertains.
Patentability shall not be negated by the manner in which the invention was made.

Claims 11 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable
over Van Auken in view of Yamada et al. (U.S. Pat. No. 6,714,425).

With regard to claims 11 and 20, Van Auken shows a method of reducing a ripple
of the output voltage in a pulse frequency modulated (PFM) voltage regulator of
converting a DC voltage source (V_{cc}) to an output voltage (V_o) comprising all the
claimed subject matter as discussed above, except for the voltage regulator
being operated in a heavy loading condition.

Yamada et al. discloses a voltage switching regulator (i.e., Figs. 1, 2) in which a
ripple at the output voltage is reduced under a heavy load (abstract).

It would have been obvious to one having ordinary skill in the art at the time
the invention was made to utilize the operation in a heavy load condition as

shown in Yamada et al. into the voltage regulator of Van Auken for the purpose of giving the voltage regulator an ability of working with a heavy load.

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Heaston et al. (U.S. Pat. No. 5,748,422), Deller et al. (U.S. Pat. No. 6,313,616), Marty (U.S. Pat. No. 6,388,433) and Bernardon (U.S. Pat. No. 6,081,024) also disclose voltage switching regulator circuits each of which comprises substantial elements as recited in the claims of the instant application.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew V. Nguyen whose telephone number is (571) 272-2800.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-2800.

Matthew V. Nguyen
MATTHEW V. NGUYEN
PRIMARY EXAMINER